

REMARKS

Claims 1-33 were pending in this application as of the January 7, 2004 mailing date of the current office action, in which claims 2-4, 6, 10-12, 15, 17, 18 and 22-27 are acknowledged by the Examiner as being allowable, but are objected to as depending upon one or more rejected base claims. The remainder of the pending claims are rejected in the current office action pursuant to 35 U.S.C. §103(a).

The Prior Art Rejections

Pending claims 1, 5, 7-9, 13, 14, 16, 19-21 and 28-33 are rejected pursuant to 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,389,867 to Ge (hereinafter referred to as "the Ge patent") in view of U.S. Patent No. 6,198,051 to Moshrefzadeh et al. (hereinafter referred to as "the Moshrefzadeh patent") and in further view of Japanese Patent Application No. JP 10-260420 (hereinafter referred to as "the Kaneko reference") and in still further view of newly cited U.S. Patent No. 6,573,954 to Hirose et al. ("the Hirose patent").

By way of review, the specific combination of the Ge patent, the Moshrefzadeh patent and the Kaneko reference formed the basis of the 35 U.S.C. §103(a) rejections included within the June 4, 2003 office action. In their response to the June 4, 2003 office action, Applicant explained in detail that the invention set forth in claims 1-33 is patentable over the specific combination of those three references.

For the sake of brevity, Applicant respectfully refers the Examiner to the previous discussion of why claims 1-33 are patentable over the combination of the Ge patent, the Moshrefzadeh patent and the Kaneko reference, inasmuch as that discussion is equally relevant hereto.

Moreover, Applicant submits that the invention of claims 1-33 is likewise patentable over the combination of these three previously cited references and the newly cited Hirose patent.

The claimed invention is directed to a liquid crystal display element that includes two combined substrates (each of which is made of a plastic plate), wherein a terminal section is extended from one of the substrates and a plurality of connecting electrodes are provided on the terminal section to connect the pixel electrode to a liquid crystal driving circuit. Thus, the connecting electrodes electrically connect the liquid crystal driving circuit to the pixel electrode of the liquid crystal.

As indicated in the specification of this application, cracks can form in the connecting electrode (e.g., due to external forces being exerted on the terminal section of the liquid crystal display element during a resin cutting process and/or during transport of the liquid crystal display panel), and if these cracks penetrate the connecting electrode, electrical disconnection can undesirably occur.

To eliminate this problem, and as recited in the claims of the present application, the connecting electrodes are provided with a hole section or a plurality of holes that prevent propagation of any cracks that might form within the connecting electrode. In accordance with the claimed invention, and as recited in several pending claims, the shape, number and/or location of the "hole section" and the "plurality of holes" can vary widely. The claimed invention is not specifically directed to solving the problem of preventing cracks from occurring and propagating within the liquid crystal display section (i.e., the pixel area) of the liquid crystal display element.

The Hirose patent discloses a liquid crystal display device that includes a contact hole, which is shown in throughout Figures 1A-4C of the Hirose patent as reference numeral "7a." The contact hole is provided to electrically connect the pixel electrode to the active element of the liquid crystal display element. Because of this function of the contact hole, its shape, location and arrangement are limited by the particular design of the liquid crystal display element and the manufacturing conditions necessary to achieve that design.

As noted in the Hirose patent, and because of the function of the contact hole and its particular placement within the liquid crystal display device, cracks can generate within the contact hole and propagate into the pixel electrode, thus causing a pixel defect in the liquid crystal display device (see the text between column 1, line 66 and column 2, line 8).

As described in the Hirose patent, the contact hole has a major axis, which is located in a light-shielding area and which extends to a nearby pixel electrode edge. This purpose of this arrangement is to ensure that if a crack is generated within the contact hole, then the resulting crack will extend in the major axis direction within the pixel electrode.

There are several significant differences between the "contact hole" described in the Hirose patent and the "plurality of holes" or "hole section" recited in claims 1-33. For example, the "hole section" and "plurality of holes" of the claimed invention are located within the connecting electrodes, and prevent the propagation of any cracks that form therein due to forces that are exerted on the terminal section of the liquid crystal display element. Conversely, the "contact hole" described in the Hirose patent seeks to prevent cracks that naturally form and propagate within the *pixel electrode*, and thus the contact hole would not be effective to prevent crack propagation within the *connecting electrodes* of a liquid crystal display element.

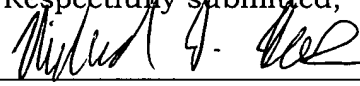
Further, the purpose of the "contact hole" described in the Hirose patent is to prevent or inhibit the ability of cracks to propagate *from* the "contact hole" into other areas of the pixel electrode, whereas the purpose of the "hole section" and "plurality of holes" of the claimed invention is to prevent the propagation and penetration of cracks that have already formed elsewhere within the connecting electrode.

Moreover, whereas the number, shape and/or location of the "hole section" and "plurality of holes" can vary widely in accordance with the claimed invention, these aspects of the "contact hole" are largely limited by the fact that the primary purpose of the contact hole is to electrically connect the pixel electrode to the active element of the liquid crystal display element.

In short, the location and purpose of the "hole section" and "plurality of holes" are very different from those of the "contact hole" described in the Hirose patent. In view of these differences, one of ordinary skill in the art would not have been motivated to produce the claimed invention based on the combination of the Ge patent, the Moshrefzadeh patent, the Kaneko reference, and/or the Hirose patent.

For at least this reason, claims 1-33 are believed to be patentable over the combination of the cited references. Therefore, reconsideration and allowance of claims 1-33 are respectfully requested. If the undersigned can be of any assistance in advancing the prosecution of this case, the Examiner is invited to contact him through the information given below.

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Respectfully submitted,
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